6.13 Water Resources

6.13.1 Introduction

Riverside Public Utilities (RPU) proposes to build and operate a nominal 96-megawatt (MW) simple-cycle power plant on a 12-acre fenced site within the City of Riverside, California. This proposed facility is referred to as the Riverside Energy Resource Center (RERC) Project (Project). RPU will develop, build, own and operate the facility. RERC will supply the internal needs of the City of Riverside during summer peak electrical demands and will serve the City's minimum emergency loads in the event RPU is islanded from the external transmission system. No power from RERC will be exported outside of the city.

This section assesses the potential impacts of the Project on water resources in the project area. Potential effects on water resources are evaluated specifically with respect to significance thresholds established in the California Environmental Quality Act (CEQA) Checklist.

6.13.1.1 Project Description

The proposed site is owned by the City of Riverside and is located adjacent to the City of Riverside's Wastewater Treatment Plant (WWTP) in a light industrial/manufacturing area. The RERC will consist of two aero-derivative combustion turbine generators with SCRs, an on-site substation, approximately 1.75 miles of 69kV transmission line, natural gas and water supply interconnection, and on-site administration building and warehouse. The power plant and associated administration building and warehouse will occupy approximately 8 of 12 acres with the additional 4 acres reserved for equipment storage and construction parking. The entire plant perimeter will be fenced with a combination of chain-link fencing and architectural block walls.

6.13.2 Laws, Ordinances, Regulations and Standards

Laws, ordinances, regulations and standards (LORS) on federal, state, county, and local levels that are applicable to water resources (in the context of the Project) are discussed in this section and summarized in Table 6.13-1. Compliance with these LORS is discussed in the subsection.

6.13.2.1 Federal

The Clean Water Act of 1972 (CWA) authorized the U.S. Environmental Protection Agency (U.S. EPA) to regulate discharges of wastewater and storm water into surface waters by issuing National Pollutant Discharge Elimination System (NPDES) permits setting effluent standards. In the state of California, Regional Water Quality Control Boards (RWQCB) implements these permits. The CWA applies to the Project for storm water discharges and soil erosion control during construction, maintenance, and operation of the plant and the associated transmission line. Erosion control plans that identify applicable Best Management Practices (BMP) to be implemented during construction

will need to be prepared for the construction of each Project element that physically disturbs or displaces surface soil.

6.13.2.2 State

California State LORS applicable to the Project include elements of the CEQA checklist and storm water permits (issued by the Santa Ana RWQCB).

California Environmental Quality Act

The CEQA checklist, provided in Table 6.13-1, defines criteria for significance of water resources impacts.

Storm Water Permits

The State Water Resources Control Board (SWRCB), pursuant to Water Quality Order No. 99-08-DWQ, requires an NPDES storm water permit for construction activities that disturb 1 acre or more of surface area. A Notice of Intent (NOI) shall be filed with the Santa Ana RWQCB prior to the start of construction activities. Comprehensive Storm Water Pollution Prevention Plan (SWPPP) must be prepared prior to filing the Notice of Intent (NOI). Upon completion of construction activities, a Notice of Termination (NOT) shall be filed with the same RWQCB.

6.13.2.3 Local

General Plan Policies

Applicable LORS identified in the City of Riverside General Plan (1994) address water supply, wastewater discharges, and storm water discharges. These policies are presented in Table 6.13-1.

Table 6.13-1 Applicable Laws, Ordinances, Regulations, and Standards

LORS	Applicability	Conformance and Timing
Federal		
CWA	Regulates storm water discharge and erosion control	NPDES permits required for construction would be obtained 60 days prior to discharge. A SWPPP would be developed prior to submitting the NOI.
State		
Porter-Cologne Water Quality Control Act	Specifies the responsibilities of the state with respect to protection of surface waters. Delegates authority to implement surface water and storm water permitting.	No action required.

LORS	Applicability	Conformance and Timing
City of Riverside General Plan Policies		
Resource Conservation: Goal WQ1 To preserve the quantity and quality of all water resources throughout the General Plan Area.	Policy 1.1: The City should adopt design and construction standards for new development that protect water quality, minimize erosion and sedimentation, and preserve natural drainage, habitat, and aesthetic functions. Standards should address runoff flow rates and the type, quality and quantity of particulates carried by runoff.	Project would consult with City for building requirements, and implement applicable BMPs to control offsite migration of sediments and potential contaminants.
	Policy 1.2: Water resources should be utilized in a manner that does not deplete the supply of groundwater; efforts to conserve local and imported water supplies should be encouraged.	Project would consult with City Water Department to ensure that proposed use of potable water would not deplete the City's resources for domestic and industrial use.
	Policy 1.5: The City should coordinate its plans, regulations and programs with those of other public and private entities, which affect the consumption and quality of water resources within the General Plan Area. These entities include water providers, Riverside County, and appropriate cities.	Project planners shall coordinate with City planners to ensure that the Project is consistent with requirements of related entities.
Goal SD 1: To achieve an effective system of natural and manmade drainage for Riverside.	Policy 1.3: The City shall require all development proposals to include storm water drainage system plans that are compatible with master drainage plans adopted by the City.	The Project will prepare a SWPPP and submit an NOI to RWQCB-8, consistent with SWRCB and City policies.

6.13.3 LORS Compliance Strategy

RERC will comply with all applicable and appropriate federal, state and local LORS by acquiring the permits described in Section 6.13.2.

The Project will utilize reclaimed and potable water, of sufficient quantity and quality to support the Project. Potable water for sanitary use would come directly from the City's general water supply. The adjacent WWTP would supply reclaimed water for cooling and plant process water. The Project would utilize a Zero Liquid Discharge (ZLD) system that will eliminate the need to discharge process wastewater to the WWTP. Therefore, the Project would be consistent with local policies.

The storm water permitting process and acquisition of the NPDES Construction Permit, including submittal of the NOI and preparation of the SWPPP, would be completed a minimum of 60 days prior to start of construction of the Project. All on-site storm water runoff would be routed to a below-grade retention/infiltration basin on-site; therefore, an Industrial NPDES permit is not required.

6.13.4 Hydrologic Setting

This section describes the water resources features in the immediate area of the Project site. The site is situated at an elevation of approximately 725 feet above sea level, with a slight slope downward towards the northwest. Existing elevations in the proposed plant area range from 715 feet to 740 feet above sea level. Geographical boundaries include the Santa Ana Mountains to the south and west, and San Gabriel and San Bernardino Mountains to the north and the Santa Ana River approximately ¼ mile north of the site.

6.13.4.1 Regional Climate and Precipitation

The climate in the Riverside area is characterized by mild winters, hot and dry summers, and low average annual rainfall. Precipitation and temperature data for the Project area was obtained from the Western Region Climate Center's online database. The weather station closest to the project site is the Riverside Experiment Station Number 047473. Table 6.13-2 summarizes the precipitation and temperature characteristics as well as the storm duration/recurrence intervals in the project area.

Table 6.13-2 Precipitation and Temperature Statistics *

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual
Average Max Temperature (F)	66.3	67.9	69.8	75.0	79.3	86.5	93.7	94.2	90.2	82.2	73.1	67.4	78.8
Avg Min. Temperature (F)	41.5	43.2	44.7	47.7	52.3	56.2	60.3	61.0	58.4	52.2	45.2	41.2	50.3
Avg Total Precipitation (in.)	2.19	2.13	1.77	0.80	0.23	0.07	0.04	0.13	0.27	0.25	0.94	1.22	10.05

*At Riverside Experiment Station 047473[a] (for period of record 7/1/48 to 7/31/03

6.13.4.2 Regional Water Supply and Use

The City of Riverside gets approximately 99 percent of its water supply from 49 groundwater wells located within the County boundary. The remaining 1 percent comes from the Western Municipal Water District (WMWD, a Riverside County agency). Between 1997 and 2001, the City pulled 84.8 percent of its groundwater supply from wells located in the San Bernardino Basin and 13.5 percent from wells in the Riverside Basin. The groundwater wells are recharged by rain and snowfall in the Bunker Hill and Riverside Drainage Basins. Total annual water use in the City in 2001 was 75,145 acre-feet.

Groundwater is pumped from these wells and distributed for municipal use (industrial and residential) through a system of underground pipelines.

6.13.4.3 Flooding Potential

The Project is located outside the floodplain zone boundary of the Santa Ana River, as mapped by the Federal Emergency Management Agency (FEMA). The flood zone in this area is bounded by the Project's northern property boundary.

The Project, including its associated transmission line, is outside the existing floodplain, and therefore will not be affected by potential flooding. The Project would convert a relatively small area to impermeable surface and therefore cause no additional flooding hazard to areas that are not currently at risk.

6.13.5 Project Water Supply

Potable water for sanitary use will come directly from the City's general water supply. The adjacent WWTP will supply reclaimed water for plant process water. The reclaimed water will be used as a make up water source for the Project's cooling water and process water to the demineralized water treatment plant. Reclaimed water will be supplied from the WWTP directly adjacent to the proposed plant site. Landscaping will be irrigated with reclaimed water from the WWTP as well. A separate connection to the City potable water system, with an approved backflow preventer, will be made to supply fire water to the plant. Layout of the fire water loop and piping, size of piping, spacing of hydrants, and equipment or buildings protected by sprinkler systems will be designed according to NFPA standards and local requirements of the City of Riverside Fire Department. Proposed connection points for the potable and fire water supply is in Acorn Avenue, approximately 60 feet from the southwest corner of the site.

The maximum water requirements shown in the process flow diagram (Figure 2.7-1) are estimated based on a 100 percent load at ambient temperatures of 100°F. The estimated water requirements are 219.6 gpm, with 16 hours of operation per day, the water consumption will be 0.221 million gallons/day.

Reclaimed water from the WWTP will be used for the cooling tower makeup and demineralized water treatment plant process water requirements. The quality of the reclaimed water supply, based on City reports, is shown in Table 6.13.3 below. This table also shows the design concentration for various constituents in the reclaimed water when the plant operates at the highest ambient temperature of 115°F.

Table 6.13-3 Water Quality of Reclaimed Supply

Constituent, (mg/l)	Reclaimed Water	City Water	Demin Plant Rejects	Cooling Tower Blowdown
Ca	67.40	0.00	249.40	303.3
Mg	12.60	0.00	46.70	56.70
Na	94.50	40.00	349.70	425.25
HCO3	169.00	0.00	625.70	760.50
SO4	81.90	55.50	303.10	368.55

Constituent, (mg/l)	Reclaimed Water	City Water	Demin Plant Rejects	Cooling Tower Blowdown
CL	137.00	30.00	507.40	616.50
NO3	10.00	25.00	36.80	45.00
SiO2	15.00	0.00	55.50	67.50
TDS	587.60	336.00	2175.00	2644.20
Blowdown Quantity, gpm	0.00	0.00	50.64	23.71

The plant will contain a 50-foot diameter, 500,000-gallon reclaimed water tank. The tank will provide 18 hours of makeup water at the design case. Raw water transfer pumps will deliver reclaimed water to the cooling tower as makeup and provide the feed to the plant demineralized water treatment equipment.

6.13.6 Process Wastewater

The RERC facility will generate wastewater primarily resulting from cooling tower blowdown, and demineralized water treatment plant wastes and relatively minor contributions from process equipment wash downs and water system tank overflows. Wastewater from the equipment area (i.e., CTG, fuel gas compressor and ammonia vaporizer) wash downs with the potential to contain floatable oil and settable solids, which will be lead to below grade coalescing oil-water separator. After removal of floatable oils and settable solids, the wastewater from the oil-water separator will be pumped to the waste water storage tank where it will combine with wastewater from cooling tower blow down and demineralized water treatment area drains.

6.13.6.1 Proposed Pretreatment of Power Plant Wastewater

Since the power plant utilizes reclaimed water for process, the effluent water quality (TDS) from the plant will be nearly 2500ppm. The plant wastewater if discharged into the City's effluent, would increase the TDS levels in the City effluent. Due to regulatory issues associated with the wastewater discharge to the City's system, a zero-liquid discharge (ZLD) system has been proposed. This ZLD system will eliminate the need for discharge into the sewer and concerns about plant contribution to TDS levels in the City's wastewater effluent and subsequent ground water degradation will be eliminated.

The demineralized water treatment RO reject water, cooling tower blowdown water and the other process drains will be sent to a waste water storage tank. Water from the storage tank will be fed to the ZLD plant. ZLD plant technology that best suits the needs of RERC will be determined in the final design by the EPC contractor. The water reclaimed from the ZLD process will be re-used in the process thereby reducing the City's reclaimed water demand. The ZLD will produce a small quantity of highly concentrated solid waste that can be trucked off for treatment and disposal.

6.13.6.2 Domestic Sewage

Other sources of wastewater (e.g., toilets, showers, sinks) would be discharged to the City's domestic wastewater system.

6.13.6.3 Storm Water System

Construction

The goal of the erosion and sediment control strategy is to retain sediment on site to the extent practicable. Erosion and sediment controls for construction activities have been selected from California's Construction BMP Handbook and will be properly installed and maintained in accordance with the manufacturers' specifications and good engineering practices. Soil and sediment control measures where necessary will be in place at the onset of soil disturbing activities. Construction-phase (temporary) BMPs were selected to control runoff from a ten-year storm event and post-construction (permanent) control strategy is based on a 50-year storm event.

Grading and construction will be sequenced to minimize the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking. Construction is planned to occur from October 2004 to May 2005, with most of the soil disturbing activities taking place from October through December 2004, prior to the rainy season.

Geosynthetic and/or matting materials may be used around the Site to temporarily or permanently stabilize soil, roads, and drains during construction activity for flow line erosion protection.

Dust control measures will be used to stabilize soil from wind erosion and reduce dust generated from the following construction activities: clearing and grading activities, construction vehicle traffic on unpaved roads, sediment tracking onto paved roads, and areas of unstabilized soil stockpiles. Water trucks will be utilized for dust control. Preventative measures such as limiting the areas of disturbance will be utilized in addition to wet suppression methods.

Roads used for construction access to the site shall be stabilized immediately after grading. Stabilization practices may include applying gravel surfacing to roadways, or applying magnesium chloride or other product to graded surfaces to provide a more durable and less dusty surface. Stabilized roads shall be frequently maintained and re-stabilized as necessary. The main construction entrance, at the southeast corner of the site, shall be stabilized by installing an aggregate surface course to reduce mud and sediment transport off-site by construction vehicles.

During grading activities, several areas may be used to stockpile soil. The soil will be stockpiled in a generally uncompacted condition prior to placement, and is, therefore, subject to erosion. In addressing stockpiling, BMPs will include diversion of drainage from the stockpile areas, placement of additional sandbag desilting facilities and silt fencing on the downgradient toe of the stockpile slope, and dust control. In addition, large stockpiles will be sloped to encourage sheet flow and reduce infiltration of rainwater.

Additional BMP to be implemented during construction would be identified in the final Storm water Pollution Prevention Plan prepared for the Project.

Post Construction

Existing drainage patterns will be preserved and off-site contributing runoff will be diverted around the project site. The finished plant site will be covered with either concrete roadways or 3/4-inch minus compacted gravel surfacing. The non-contact plant site drainage will be directed by surface flow to an underground storm water retention/infiltration basin at the low side of the site. Storm water that could potentially come in contact with hydrocarbons will be conveyed by underground piping to an oil/water separator prior to treatment. Containment of spills and source control will be incorporated into the final design. Off-site runoff enters the site from the south near the southeast property corner. This runoff will be captured and taken underground at a catch basin located south of the entrance road. From the catch basin, the off-site runoff will be routed by underground gravity piping to the storm water retention/infiltration basin located at the low end of the site. The storm water retention/infiltration basin will be sized to contain the difference in runoff volume between pre and post development of the site for a 50-year storm event and will have an open bottom for infiltration. Overflow from the retention/infiltration basin, if it occurs, will overflow on the surface to a storm water catch basin on the WWTP site just to the east of the retention/infiltration basin.

Facilities that do not discharge to Waters of the United States are not subject to the requirements of the General Permit for Discharges of Storm Water Associated with Industrial Activity. Because non-contact plant site drainage will be directed by surface flow to an underground storm water retention/infiltration basin, the General Permit does not apply.

6.13.7 Impacts

This section evaluates the potential impacts of the RERC with respect to the potential effect on various water resources including ground and surface water quality and quantity. Consistency with LORS is also examined. The CEQA Checklist is provided in Table 6.13-4.

Table 6.13-4 CEQA Environmental Checklist – Water Resources

HYDROLOGY AND WATER QUALITY -- Would the project:	Potentially Significant Impact	Less than Significant w/Mitigation	Less than Significant	No Impact
a) Violate any water quality standards or waste discharge requirements?				X
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				X
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site?				X
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?				X
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				X
f) Otherwise substantially degrade water quality?				X
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?				X

HYDROLOGY AND WATER QUALITY -- Would the project:	Potentially Significant Impact	Less than Significant w/Mitigation	Less than Significant	No Impact
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
j) Inundation by seiche, tsunami, or mudflow?				X
k) Substantially deplete or degrade local or regional surface water supplies, particularly fresh water, or fail to implement reasonable alternatives for water conservation?				X

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6.13.7.1 Project Effect on Surface or Groundwater Supplies

Because the project would utilize reclaimed water from the adjacent Wastewater Treatment Plant for cooling and process water, the potential impact to surface or groundwater supplies would be insignificant. Small amounts of City water would be used for domestic purposes by the staff at the facility. The use of wastewater would be consistent with the SWRCB policy regarding power plant cooling water.

6.13.7.2 Project Effect on Wind or Water Erosion and Sedimentation

Storm water runoff will be controlled during construction and operation of the RERC through adherence to the Santa Ana RWQCB Construction Activity Storm Water Permit. The permit requires preparation of a SWPPP that identifies methods to control and reduce erosion and sedimentation. Adherence to conditions of the permit and implementation of BMPs outlined in the SWPPP will reduce potential impacts to a level of insignificance.

6.13.7.3 Project Effect on Water Quality Degradation

The ZLD system will eliminate the need for discharge into the sewer and concerns about plant contribution to TDS levels in the City's wastewater effluent and subsequent ground water degradation will be eliminated.

Small amounts of wastewater from conventional sources (eg., toilets, showers, sinks) are proposed to be discharged into the City's domestic system, but no significant impacts are anticipated from this low volume source.

6.13.7.4 Flooding Potential

The RERC and its associated transmission line are not located in an identified flood zone. Storm water would be retained on site in a retention/infiltration basin designed to handle storm water flows from a 50-year event. Overflow from the retention/infiltration basin, if it occurs, will overflow on the surface to a storm water catch basin on the WWTP site just to the east of the retention/infiltration basin. WWTP staff has indicated it has adequate capacity to accommodate overflow if it occurs.

6.13.7.5 Project Consistency with Applicable LORS

The RERC will be constructed in compliance with all applicable LORS including the permits listed in Table 6.13-1. Because the Project will utilize reclaimed water for cooling and process water it is consistent with the SWRCB and CEC staff policy to use alternative water supplies whenever possible.

6.13.8 Cumulative Impacts

No additional industrial facilities that would consume substantial water supplies have been identified in the project vicinity. Any new facilities proposed would be subject to environmental review and any water use or quality impacts would be evaluated and mitigated. The Project is not anticipated to contribute to cumulative water resource impacts.

6.13.9 Mitigation and Monitoring

Because the project will comply with applicable LORS, there will be no significant impact on water resources and additional mitigation measures beyond the conditions and stipulations outlined in project related permits would be required.

6.13.10 Agency Contacts and Permits

Agency contacts and permits required are shown in Table 6.13-5.

Table 6.13-5 Agency Contacts and Permits

Permit	Agency
Construction Activity NPDES Storm Water Permit	SARWQCB Milasol Gaslan 3737 Main St. Suite 500 Riverside CA 92501 (909) 782-4419
NA	Riverside Public Works Department Tom Boyd 3900 Main Street Riverside CA 92522 (909) 826-5575

6.13.11 References

City of Riverside. 1994. The 1994 General Plan. Certified September 13.

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GWF Energy, LLC. 2001. Tracy Peaker Project Application for Certification for Small Power Plan Exemption.

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